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entitled "Scalable Monitoring Method and Device". The subject matter of said application is hereby incorporated by reference.--;

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Page 1, line 1, before the paragraph beginning "The present invention..."  
insert the following heading at the left-hand margin:

--FIELD OF THE INVENTION--;

Page 1, line 4, before the paragraph beginning "The computer system..." insert  
the following heading at the left-hand margin:

--DESCRIPTION OF RELATED ART--;

Page 1, line 27, before the paragraph beginning "The object of the present..."  
insert the following heading at the left-hand margin:

--SUMMARY OF THE INVENTION--;

Page 4, line 4, before the paragraph beginning "The invention, along..." insert  
a paragraph indentation and the following heading at the left-hand margin:

-- BRIEF DESCRIPTION OF THE DRAWINGS--;

Page 4, line 8, before the paragraph beginning "Setting up a..." insert a  
paragraph indentation and the following heading at the left-hand margin:

--DESCRIPTION OF THE INVENTIVE EMBODIMENTS--;

Delete the paragraph beginning on Page 14, line 31, with "It should be clear..."  
and substitute with the following new paragraph:

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It should be clear to those skilled in the art that the present invention allows  
for embodiments in many other specific forms without going beyond the scope of  
application of the invention as claimed. Consequently, the present embodiments

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should be considered as examples, which can be modified within the range defined by the true spirit and scope of the invention as set forth in the attached claims, to which resort should be made for a full and complete understanding of the full scope of the invention.

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# METHOD AND DEVICE FOR DEPLOYING A DISTRIBUTED MONITORING

## FIELD OF THE INVENTION

The present invention relates to a method and a device for deploying a distributed monitoring of a computer system.

## DESCRIPTION OF RELATED ART

The computer system is constituted by a set of computer equipment units, called distributed resources, each being interconnected to the others through a communication network.

Large companies have an increasing number of units of computer equipment to manage. These units, connected to one another through a communication network called a local area network (LAN), are managed by a manager. In order to manage (supervise, act on, monitor, control) these units remotely from one point, an architectural model comprising a manager and an agent, for example of the SNMP type, is most commonly adopted. In this architectural model, the (SNMP) agents implemented in the equipment units of the network inform the manager of the status of each of the units managed. In the vast majority of cases, this manager manages several hundred thousand units of distributed equipment in one or several countries.

In order to characterize the behavior of a set of resources interconnected through a network, any monitoring method synthesizes, and therefore calculates values known as indicators, which make it possible to characterize the operation and the status of these resources. The calculation of an indicator is performed by an agent called an "indicator agent," which periodically calculates a value resulting from a function that combines values measured by means of an SNMP or CMIP protocol layer with values calculated by other indicator agents.

The difficulty in setting up equipment monitoring according to the prior art lies in the increase in the number of units of equipment, which requires the management to be distributed, and consequently makes it necessary to automate the deployment of this distributed monitoring.

## SUMMARY OF THE INVENTION

The object of the present invention is to eliminate the drawbacks of the prior art by offering a method for deploying distributed monitoring that makes it possible to automate and parallelize the deployment of a monitoring.

This object is achieved by the method according to the invention, characterized by a configuration step that specifies, for each indicator to be deployed, the domain or domains of the computer system in which each indicator should be deployed, an indicator characterizing the status or the operation of one or more resources of the computer system, and a step for

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deploying the specified configuration, implemented by an agent called a configuration deployment agent that creates, for each resource to be monitored, an agent called a configuration agent, this configuration agent handling the creation of the indicator agents for the resource that has been assigned to it by the configuration deployment agent.

5 In another embodiment, each configuration agent creates an agent called an indicator deployment agent for each indicator of the resource to which it is assigned, and this indicator deployment agent determines, for the indicator with which it is associated, the various combinations of the values of the variables for which the indicator is calculated.

10 In another embodiment, for any indicator, an indicator compiler, after analyzing the formula defining the indicator, generates two object classes "I\_Deployer" and I\_Indicator", which respectively correspond to the indicator deployment agents that deploy the instances of the class "I\_Indicator" and to the indicator agents that evaluate the indicator.

15 In another embodiment, the indicator deployment agent executes a process for resolving the names of the objects referenced in the formula of the indicator and creates the corresponding indicator agents by determining the valid combinations of the values of the variables of these objects.

In another embodiment, the name resolution process consists of applying a process for searching for all of the objects identified in the formula of the indicator, the search process consisting of:

- 20 - verifying for a referenced object whether a constraint expressed in the values of the variables is satisfied,  
- if the constraint is satisfied, creating the indicator agent associated with the indicator deployment agent, using as parameters the objects corresponding to the valid combinations of the values of the variables found.

25 In another embodiment, the configuration deployment agents and the configuration agents are managed by at least one agent machine installed in at least one resource of the monitored domain.

30 In another embodiment, each indicator deployment agent is managed either by the agent machine that manages the configuration agent associated with the indicator deployment agent, or by a different agent machine.

A second object of the invention is to eliminate the drawbacks of the prior art by offering a device for deploying a distributed monitoring that makes it possible to automate and parallelize the deployment of a monitoring.

This object is achieved by the device for the deployment of a distributed monitoring, characterized in that it comprises a plurality of resources to be monitored, characterized in that it comprises configuration means that specify, for each indicator to be deployed, the domain or domains of the computer system in which each indicator should be deployed, an indicator characterizing the status or the operation of one or more resources of the computer system, the configuration means also comprising an agent called a configuration deployment agent that creates, for each resource to be monitored, an agent called a configuration agent, this configuration agent handling the creation of indicator agents for the resource that has been assigned to it by the configuration deployment agent.

In another embodiment, each configuration agent comprises means for creating an agent called an indicator deployment agent for each indicator of the resource to which it is assigned, this indicator deployment agent determining, for the indicator with which it is associated, the various combinations of the values of the variables for which the indicator is calculated.

In another embodiment, the device comprises an indicator compiler that generates for each indicator, after analyzing the formula defining the indicator, two object classes "I\_Deployer" and "I\_Indicator", which respectively correspond to the indicator deployment agents that deploy the instances of the class "I\_Indicator" and to the indicator agents that evaluate the indicator.

In another embodiment, the indicator deployment agent comprises means for resolving the names of the objects referenced in the formula of the indicator and means for creating the corresponding indicator agents by determining the valid combinations of the values of the variables of these objects determined by the name resolution means.

In another embodiment, the name resolution means comprise means for searching for all of the objects identified in the formula of the indicator, the search means comprising means for verifying, for a referenced object, whether the constraint expressed in the values of the variables is satisfied, and means for creating the indicator agent associated with the indicator deployment agent if the constraint is satisfied, using as parameters the objects corresponding to the valid combinations of the values of the variables found.

In another embodiment, the configuration deployment agents and the configuration agents are managed by at least one agent machine installed in at least one resource of the monitored domain.